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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Makoto Iyoda

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EXAMINER

BARROW, AMANDA J

ART UNIT

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4111

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/567,603	Applicant(s) IYODA ET AL.	
	Examiner AMANDA BARROW	Art Unit 4111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/27/06 and 2/8/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 9 and 10 are objected to because of the following informalities: Claims 9 and 10 recite “coloring agent holding suction” and should read “coloring agent holding section”.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (US 2004/0072049) (hereinafter “Becerra”) in view of King (US Patent 3,317,283).

Regarding claims 1 and 2, Becerra teaches a fuel container and delivery assembly (1302) that contains a fuel bladder 1305a that holds and supplies a liquid fuel such as methanol for the

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purpose of electric power generation in a fuel cell system (paragraphs 4-6 and 65-67). This is illustrated below in Figure 13:

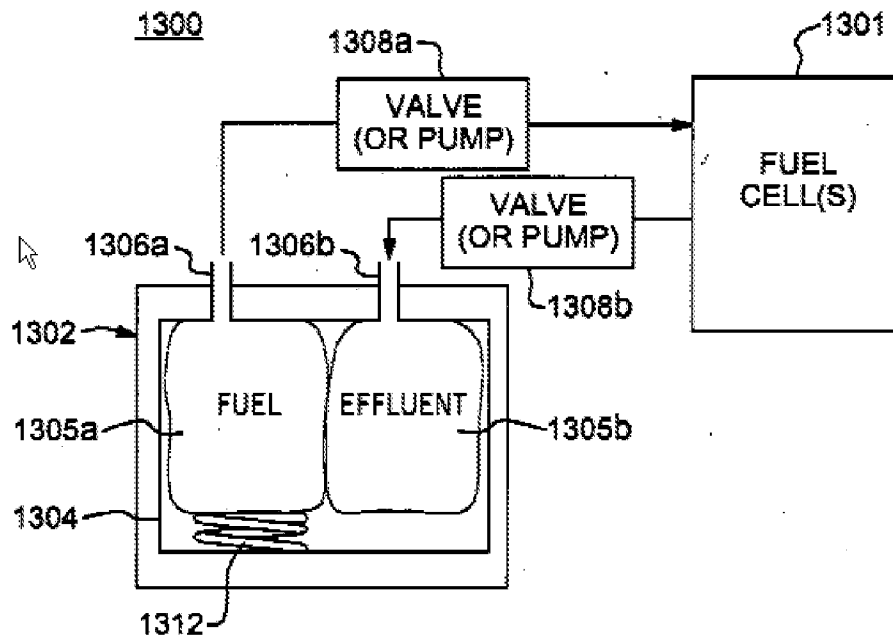


FIG. 13

Becerra teaches that the fuel substance may be mixed with one or more additives that increase the fuel's detectability in case the fuel escapes from the container. Such safety enhancing additives include a color additive. Becerra continues to teach that the safety-enhancing additives should be stored and maintained separately from the fuel (paragraphs 11 and 12). It is the position of the examiner that the prior art of Becerra covers the claim as Becerra describes the color additive and states that it should be stored and maintained separately from the

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fuel; part of or the entire "outer peripheral portion" of the fuel container falls within having the color additive stored separately from the fuel.

In the alternative, King teaches that a dye soluble in organic liquid ("coloring agent") should be added to the outside ("outer peripheral portion") of a tank holding an organic liquid so that a color change can be viewed from the outside if the organic liquid leaks and mixes with the dye (column 1). It is within the ambit of a person of ordinary skill in the art to incorporate the placement of the dye of King to the fuel cell system of Becerra. It would be obvious to make this combination as methanol has associated risks to persons and properties and safety precautions are typically followed when using the substance (Becerra – paragraph 11). Also, by placing the coloring agent to the outside, the color change can be viewed rapidly and easily allowing avoidance of a methanol leak which is a health hazard and adversely effects the operation of the equipment (King – column 1, lines 9-27).

Regarding claim 3, Becerra teaches that fuel is supplied from the fuel bladder 1305a via the fuel outlet 1306a ("connection port") to the fuel cell body (1301). In the rejection of claims 1 and 2, it was shown that either Becerra or Becerra in view of King teaches that the color additive/dye ("coloring agent") can be placed in part of or in the entire "outer peripheral portion." Therefore, it would be obvious that the color agent would be "in the neighborhood" of the fuel outlet 1306a ("connection port") as the fuel outlet is connected to the fuel bladder 1305a.

Regarding claim 8, Becerra teaches a second bladder 1305b ("product holding section") that is provided to receive effluent from the cathode and/or anode aspect of the fuel cell 1301 via the effluent inlet 1306b. Becerra teaches that the effluent can be comprised of water (paragraph 66). Becerra or Becerra in view of King teach that the coloring additive/dye is placed at the

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“outer peripheral portions” of the fuel bladder 1305a and the second bladder 1305b (“product holding section”) (see the rejection of claims 1 and 2). The leakage of the liquid fuel or water will be detected by a difference in the change of color of the coloring additive (Becerra - paragraph 11).

4. Claims 4, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (US 2004/0072049) (hereinafter “Becerra”) in view of King (US Patent 3,317,283) as applied to claims 1-3 and 8, and further in view of Yoshiki et al. (Japanese Patent Application 2003/015467) (hereinafter “Yoshiki”).

Regarding claim 4, Becerra does not positively recite a “coloring agent holding section,” however, Yoshiki teaches a layer that contains a soluble coloring substance when dissolved by a liquid (“coloring agent holding section”) for the purposes of leak detection (abstract).

It would be obvious to a person of ordinary skill in the art to adapt the layer of Yoshiki to the “outer peripheral portion” of the fuel container and delivery assembly 1302 of Becerra in order to provide a way to hold the coloring substance so that it allows a person to visually recognize from the outside that there is a leak (Yoshiki - abstract).

Regarding claim 9, Yoshiki teaches a layer that contains a soluble coloring substance when dissolved by a liquid (“coloring agent holding section”) for the purposes of leak detection that can be visually recognized from the outside (“visual recognition window”) (abstract). The motivation for adapting the layer of Yoshiki to the fuel cell of Becerra is stated in the rejection of claim 4.

Regarding claim 12, Becerra teaches a liquid feed fuel cell to be used with a portable, handheld device (paragraph 10) that includes a fuel cell system which generates power and has a

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fuel container and delivery assembly 1302 that may be a cartridge which is inserted into the fuel cell and can be removed and replaced with a full cartridge when empty (paragraph 65). Becerra also teaches that the fuel container and delivery assembly 1302 may be a type of canister or refueling device that can be attached to the fuel cell system at an appropriate location (paragraph 65). Becerra teaches that there is a fuel cell 1301 that generates electric power by using the liquid fuel supplied from the fuel container and delivery assembly 1302 (paragraph 66). A “container mounting portion” is not labeled in the corresponding figure (Figure 13); however, Becerra states that it is “attached at an appropriate location,” thus a “container mounting portion” must be present.

Becerra does not teach a device-side visual recognition window; however, Yoshiki teaches a layer that contains a soluble coloring substance when dissolved by a liquid (“coloring agent holding section”) for the purposes of leak detection that can be visually recognized from the outside (“visual recognition window”) (abstract) (see the rejection of claim 4 for more detail).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (US 2004/0072049) (hereinafter “Becerra”) in view of King (US Patent 3,317,283) as applied to claims 1-3 and 8, and further in view of Hsu (US Patent Application 2003/0097762 A1).

Regarding claims 5, Becerra teaches that the liquid fuel is methanol (paragraph 4) but does recite that the coloring additive contains cobalt chloride in the solid phase. Hsu does teach that cobalt chloride in the solid phase is used as a color indicator (paragraph 27). It would therefore be obvious to a person of ordinary skill in the art to use cobalt chloride as a color indicator as it provides a substantial color change in the solid phase (blue to red) thus indicating

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that the cobalt chloride has mixed with a liquid and that there is moisture present (i.e. - a leak) (Hsu – paragraph 27).

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (US 2004/0072049) (hereinafter “Becerra”) in view of King (US Patent 3,317,283) and Yoshiki et al. (Japanese Patent Application 2003/015467) (hereinafter “Yoshiki”) as applied to claim 4, and further in view of Cornell (US Patent 4,079,729).

Regarding claim 6, Becerra teaches that the liquid fuel is methanol (paragraph 4) but does not recite that the coloring additive is a cobalt chloride aqueous solution. Cornell teaches that an indicator can be made of a liquid containing cobalt chloride and water (column 4, lines 3-24). It would therefore be obvious to a person of ordinary skill in the art to use aqueous cobalt chloride as a color indicator as it provides a substantial color change in the aqueous phase (blue to pink) thus indicating that the cobalt chloride has mixed with a liquid and that there is moisture present (i.e. - a leak) (Cornell – column 4, lines 3-24).

Regarding claim 7, Becerra teaches that part of the water generated by the fuel container and delivery assembly 1302 is configured to accept water from the cathode and/or anode aspect of the fuel cell 1301 (paragraph 66; also see Figure 13). If one adapts the layer that contains a soluble coloring substance when dissolved by a liquid ("coloring agent holding section") of Yoshiki to the fuel cell system of Becerra (see the rejection of claim 4), it would be obvious that this “coloring agent holding section” could be configured to accept water from the fuel container and delivery assembly 1302 in order to generate the cobalt chloride aqueous solution from the solid cobalt chloride. Cornell provides the motivation for this in that cobalt chloride provides a

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substantial color change when mixed with water and/or organic solvent indicating the presence of these liquids thereof (i.e. - a leak) (Cornell – column 4, lines 3-24).

7. Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (US 2004/0072049) (hereinafter “Becerra”) in view of King (US Patent 3,317,283) and Yoshiki et al. (Japanese Patent Application 2003/015467) (hereinafter “Yoshiki”) as applied to claim 4 above, and further in view of Ebbeson (US Patent 4,416,617).

Regarding claim 10, Becerra does not teach an absorber for absorbing and retaining the liquid fuel from the fuel bladder 1305a; however, Ebbeson does teach that a fuel container has a fuel absorbing mass (28) that absorbs and retains a liquid fuel that is leaked (column 1, lines 5-12). This fuel absorbing mass could be incorporated into the layer that contains a soluble coloring substance when dissolved by a liquid ("coloring agent holding section") of Yoshiki. It would be obvious to a person of ordinary skill in the art to do this for the purpose of not allowing the fuel to leach out of the system (Ebbeson – column 1, lines 28-56).

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (US 2004/0072049) (hereinafter “Becerra”).

Regarding claim 11, Becerra teaches that the fuel container and delivery assembly 1302 may be a cartridge which is inserted into the fuel cell and can be removed and replaced with a full cartridge when empty (paragraph 65). Becerra also teaches that the fuel container and delivery assembly 1302 may be a type of canister, a refueling device that can be attached to the fuel cell system at an appropriate location (paragraph 65). Becerra teaches that there is a fuel cell 1301 that generates electric power by using the liquid fuel supplied from the fuel container and delivery assembly 1302 (paragraph 66). A “container mounting portion” is not labeled in the

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corresponding figure (Figure 13); however, Becerra states that it is "attached at an appropriate location," thus a "container mounting portion" must be present.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMANDA BARROW whose telephone number is (571)270-7867. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AMANDA BARROW/
Examiner, Art Unit 4111

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795

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